MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

TIS1101 – Database Fundamentals

(All sections / Groups)

02 MARCH 2020
9.00 am – 11.00 am
(2 hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages, including the cover page, with four questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the answer booklet provided.

Answer ALL Questions

QUESTION 1

(a) Describe what ternary degree relationship is. Illustrates this relationship with an example.

[2 marks]

(b) Draw a complete Internal Entity-Relationship Diagram (ER-D) using Crow's Foot notation based on the following business rules:

- Each game is registered by a staff, but a staff may register many games.
- Each game may require one or many venues. Each venue may be used for many games.
- Each game consists of at least one team. Each team joins one and only one game at a time.
- Each team is formed by at least two players. A player joins one and only one team.

The primary key and foreign key (if any) must be included for every entity, other attributes are optional. The cardinality, connectivity and relationship strength in your ER diagram must be denoted accordingly.

[8 marks]

Continued...

QUESTION 2

The following is a relational schema of the Trio Training Center. The primary key for each relation is in bold and foreign key is underlined.

INSTRUCTOR (**Ins_Num**, Ins_Name, Ins_Specialty)

TRAINEE (**Trn_Num**, Trn_Name, Trn_Contact, Trn_Email)

COURSE (**Crs_Num**, Crs_Name, Crs_Credit)

CLASS (**Css_Num,** Css_TimeTable, Crs_Num, Ins_Num, Ven_Num)

ENROLL (**Css_Num, Trn_Num**, Enr_Date, Enr_Status)

VENUE (**Ven_Num**, Ven_Name, Ven_Capacity)

(a) Write a SQL command to list all the trainee names, trainee contact, class timetable under the status of 'Confirm' enrollment on February 25, 2020.

[3 marks]

(b) Write a SQL command to count the number of instructors grouped by their specialty. The records should be sorted by the highest number of specialty on top.

[2 marks]

(c) Write a SQL command to create a view to display all the possible enrollment status.

[1 mark]

(d) List the instructor names that have not conducted any class between the periods of November 2018 to March 2019. [3 marks]

(e) List all the venues that can accommodate up to 200 trainees per session. [1 mark]

Continued...

QUESTION 3

Answer questions (a) to (c) based on the following relation:

TicketID	PaidAmt	Quantity	JourneyID	FromStation	ToStation	Price	ScheduleID	ScheduleDepTime	CustID	CustName

(a) Draw the dependency diagram in 1NF for the above relation. Show all the dependencies and underline the primary key(s)

[4 marks]

(b) Based on your solution in Question 3(a), normalize the relation to 2NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

(c) Based on your solution in Question 3(b), normalize the relation to 3NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

Continued...

QUESTION 4

(a) In DataBase Life Cycle (DBLC), *testing and evaluation* phase is often carried out in parallel with applications programming. If implementation fails to meet some of the system's evaluation criteria, what are THREE options that a database designer may consider to enhance the system?

[3 marks]

(b) List any THREE disadvantages of cloud computing.

[3 marks]

(c) One of the characteristics of Internet technologies is *hardware and software independence*. List any TWO benefits of hardware and software independence.

[2 marks]

(d) What is the difference between a private cloud and a community cloud?

[2 marks]

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